

In the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

1. (currently amended) An I/O circuit placement method for placing I/O circuits included in a semiconductor device, comprising a step of:

placing at least two rows of I/O circuits on a first side of a chip, wherein each I/O circuit has a head section and a tail section, the head section and the tail section are arranged in a column direction perpendicular to a row direction of the I/O circuits, wherein the head sections of at least one of the two rows are oriented to the tail sections in the adjacent rows, the tail section transfer signals to and from external devices and the head section serves as an interface circuit between the tail section and a core circuit region to convert signal level.

2. (original) The placement method as claimed in claim 1 further comprises a step of placing another row of I/O circuits on a second side of the chip.

3~4. (cancelled).

5. (original) The placement method as claimed in claim 1, wherein a different number of I/O circuits are placed in different rows.

6. (currently amended) A semiconductor device, comprising:

a chip; and

at least two rows of I/O circuits placed on a first side of the chip, wherein each I/O circuit has a head section and a tail section, the head section and the tail section are arranged in a column direction perpendicular to a row direction of the I/O circuits, wherein the head sections of at least one of the two rows are oriented to the tail sections in the adjacent rows, the tail section transfer signals to and from external devices and the head section serves as an interface circuit between the tail section and a core circuit region to convert signal level.

7. (original) The semiconductor device as claimed in claim 6, further comprising another row of I/O circuits placed on a second side of the chip.

8~10. (cancelled)

11. (previously amended) The semiconductor device as claimed in claim 6, wherein the core circuit region is disposed on the chip, and the rows of I/O circuits are disposed outside the core circuit region and are at the periphery of the chip.

12. (original) The semiconductor device as claimed in claim 6, wherein the number of the I/O circuits placed in the different rows is different.

13. (currently amended) A semiconductor device, comprising:

a chip;

a core circuit region disposed on the chip;

a loop of I/O circuits disposed at the periphery of the chip and around the core circuit region; and

at least one row of I/O circuits disposed between the loop of I/O circuits and the core circuit region, wherein each I/O circuit has a head section and a tail section, and the head sections of the row are oriented to the tail sections in an adjacent row.

14~16. (cancelled).